Lin, Cindy

From: Cindy Lin <Lin.Cindy@epamail.epa.gov>
Sent: Monday, March 10, 2014 4:29 PM
To: Lin, Cindy
Subject: Fw: RE: Malibu Creek meeting follow-up: Geology matters!

Cindy Lin, D.ENV.
Water Division
US EPA R9 Southern CA Office
600 Wilshire Blvd, Ste 1460
Los Angeles, CA 90017
Office: 213.244.1803 Cell: 858.699.1255

-----Forwarded by Cindy Lin/R9/USEPA/US on 03/10/2014 04:29PM -----
To: Cindy Lin/R9/USEPA/US@EPA
From: "Joe Bellomo" <jbellomo@willdan.com>
Date: 08/24/2012 03:38PM
Subject: RE: Malibu Creek meeting follow-up: Geology matters!

Hi Cindy,

The Malibu Creek Watershed recently had its monthly meeting and the Group was interested in the status of the sediment and benthic TMDLs. Any information you can share would be greatly appreciated.

Thanks,

Joe Bellomo

805-279-6856 Cell

From: Cindy Lin [mailto:Lin.Cindy@epamail.epa.gov]
Sent: Wednesday, May 02, 2012 5:29 PM
To: Dougall, Jan
Cc: Joe Bellomo; jon.butcher@tetratech.com; Orton, Randal
Subject: Re: Malibu Creek meeting follow-up: Geology matters!

Jan,

Thank you for the information you provided. I have kept many of these in mind as we moved forward. As I have said during the meeting last week, I really did not go into any depth as we are still evaluating the information, but I did want to give everyone a sense of how we are moving along. We are trying to be as conscientious as possible as we move forward. In response to your requests of all the data, please be patient with us as we move forward and try to complete things appropriately and in a timely manner. In terms of the listing information, I have placed the request to LA regional board folks and we are still working on the details. They have also been quite impacted by other projects and programs. We will continue to try and set something up with them in near future.

Cindy

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Water Division
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Los Angeles, CA 90017
Office: 213.244.1803 Cell: 858.699.1255

-----"Dougall, Jan" <jdougall@lvmwd.com> wrote: -----

To: Cindy Lin/R9/USEPA/US@EPA, <jon.butcher@tetratech.com>
From: "Dougall, Jan" <jdougall@lvmwd.com>
Date: 05/02/2012 04:50PM
Cc: "Orton, Randal" <ROrton@LVMWD.com>, "Joe Bellomo" <jbellomo@willdan.com>
Subject: Malibu Creek meeting follow-up: Geology matters!

Hi Cindy and Jon,

Thanks again, Cindy, for meeting with the Malibu Creek Watershed Management Committee last week. It was nice to see you and get an update on TMDL progress.

There are a few things I wanted to follow up on. We'd like to be sure the best available science is used to develop the TMDLs. And we're analyzing the same set of data that you are analyzing.

Data: You mentioned having Heal the Bay's P-Hab data, and I didn't find that with the listing data, so we were wondering if you've been able to get their most recent bioassessment data. You also showed data as old as 1998, and our most recent data is 2003. We'd be interested in getting Heal the Bay's data and other data we don't have. The only bioassessment data we have is what was provided to you on Joe's FTP site. We also have never received a response from you (see attached email) or anyone at the Regional Board on our requests for information and data relating to the sediment TMDL.

- Could you provide us with the macroinvertebrate and P-Hab data you are using, other than what we gave you?

- Could you provide information on the sedimentation siltation listing being used for TMDL development?

    - Can we obtain the listing data (Data Reference)?
    - What was the Water Quality Objective/Criterion?
    - What is the Objective/Criterion Reference?
    - What was the Evaluation Guideline?
    - What was the Guideline Reference?

Malibu Creek's exceptionalism: I mentioned that when I asked a question at the third Biological Objectives Scientific Advisory Group meeting, Peter Ode responded by saying methods being developed may not apply in Malibu Creek watershed. I do recommend you contact him in case I misinterpreted him, or in case changes made since then change what his response would be. What I was able to record from Pete's response, filling in direct quotes with my best recollection of what he said in brackets is: California [is] diverse. [To give the scientific advisory group some background,] the Monterey Formation is a world renown oil-bearing formation high [in] natural conductivity. [Thus] the biology at a site [may be] unfairly judged as impaired. [Although we] tried to capture sites like that in the reference pool, there will always be some settings that aren't captured and scoring tools will fail. [The] Assessment Framework can't model all sites. I think this is a case where that would apply.

Electrical conductivity and ionic composition: We included information on the effects of conductance and ion toxicity on macroinvertebrate indices with the original data submission via FTP site in September and again in February, as well as in a March 15th email (attached), documenting its substantial influence on macroinvertebrate community health. In fact, the California Biological Objectives Technical Team has included "log Predicted Conductivity" as one of the 4 or 5 model predictors for the O/E model. So nearby coastal streams with significantly lower conductivity and different ion composition cannot serve as reference streams for Malibu Creek, which is well-documented to be high in conductivity – brackish its entire length - with ion levels known to be toxic to benthic macroinvertebrates. This would be another good topic to discuss with Pete Ode when you call him. He explained that log Predicted Conductivity is generated by a combination of about 20 different geologic and climatic variables.

Perenniality – Current stream bioassessment methods, including multimetric indices and predictive models, such as O/E, were developed for perennial streams, while many reaches of Malibu Creek and tributary streams are non-perennial. Much of Malibu Creek dries up in summer or dries to form isolated pools. The California biological objectives effort is currently only aimed at perennial streams and is not meant to be applied to non-perennial streams. We are unaware of any bioassessment methods being applied to non-perennial streams for regulatory purposes. Xerces has written a white paper that summarizes the academic literature on macroinvertebrate response to flow that may be of use: http://www.xerces.org/wp-

content/uploads/2009/03/xerces_macroinvertebrates_indicators_stream_duration.pdf. This is another topic you might discuss with Pete Ode.

Site MC-1 has a USGS gage, which showed no flow for 120 days in 2008, 134 days in 2009, 91 days in 2010 and 61 days in 2011. Our photomonitoring data show this site goes completely dry most summers.

Site MC-15 is between Tapia and the LA County gage. Tapia is required to discharge for endangered steelhead when flows drop below 2.5 cfs for a specified series of days. LA County gage data shows that flows dropped to less than 3.0 cfs between 62 and 146 days per year for the last five year period.

Site MC-5 is at the Rock Pool at Malibu Creek State Park. We don't have data from this site, but I volunteered as a docent at the Visitor Center just downstream and saw that reach dry in 2009 and 2010.

IBI and O/E Models require appropriate reference site selection: The California Biological Objectives Technical and Scientific Teams have acknowledged the importance of determining appropriate reference conditions to use for assessment of any watershed. To that end they've moved toward an O/E approach that uses elevation, watershed area, log predicted conductivity (which includes climate and geology), and temperature to match reference conditions to conditions at sites being assessed. The Monterey Formation strongly influences water quality, which the attached email shows strongly influences macroinvertebrate communities. The table below compares the percent of the subwatershed with Monterey Formation exposure for a selection of sites you shared.

Site	Pct Monterey/Modelo Fm in subwatershed
Your MC-1 (HtB 1)	16.6%
Your MC-12 (HtB 12)	14.2%
Your MC-15 (HtB 15)	17.1%
HtB 19 (Lachusa Creek)	0.0%
HtB 18 (Solstice Creek)	3.4% but none upstream of the monitoring site.
HtB 3 (Upper Cold Creek)	0.0%
HtB 2 (Lower Cold Creek)	0.0%

It does not appear that your reference sites have comparable geology. Without comparable geology, we don't believe these are appropriate reference sites, especially given the impact that Malibu Creek's geology has on its native water quality.

Malibu Lagoon: Estuarine biological assessment methods and thresholds haven't yet been worked out in California. The state is in the process of developing a benthic response index (BRI) to assess sediment quality for bays and estuaries with salinities of 18 ppt or greater, but that is not yet ready. Upstream conditions should also be taken into consideration when analyzing conditions in the lagoon; if ion and metals concentrations in creeks are toxic to macroinvertebrates, these ion concentrations may also have some effect on benthic communities in the lagoon.

Internal Review: You mentioned that there would be a review of the draft TMDL, but from scientists within the EPA. We would like to recommend Gregory Pond, the author of the paper referenced in the attached email. He will know the effects of specific conductance and ionic composition and concentration on macroinvertebrate community indices. But he should also be made aware that in the Malibu Creek watershed the geology is undisturbed by mining, but is much younger and in a tectonically active setting, so naturally affects water quality.

Thank you very much for your attention to our concerns.

Jan Dougall

Environmental Analyst

Las Virgenes Municipal Water District

4232 Las Virgenes Rd.

Calabasas, CA 91302

(818) 251-2167

jdougall@lvmwd.com

----- Message from "Dougall, Jan" <jdougall@lvmwd.com> on Thu, 15 Mar 2012 09:44:49 -0700 -----

To: <Lin.Cindy@epamail.epa.gov>,
<jon.butcher@tetratech.com>
cc: "Orton, Randal" <ROrton@LVMWD.com>
Subject: Malibu Creek TMDLs - information and request

Hi Cindy & Jon,

Information

I've attached some information that may be useful to you for the development of the Benthic Macroinvertebrate Bioassessment TMDL for reaches in Malibu Creek watershed.

The first attachment is the academic journal article "Downstream effects of mountaintop coal mining: comparing biological conditions using family- and genus-level macroinvertebrate bioassessment tools" describing the results of an EPA study on the effects of coal mining valley fill on downstream macroinvertebrate communities. The paper documents the causal linkage between water quality and macroinvertebrate multi-metric indices (MMIs). The EPA found that "most biological metrics and the MMIs had substantially stronger correlations with specific conductance and individual ions than with the mining-related metals or individual habitat variables." In fact, the EPA concluded that "specific conductance is the best predictor of the gradient of conditions found downstream of alkaline mine drainage and valley fill sites in the Central Appalachians." The EPA then used these findings to develop "A Field-Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams" (EPA/600/R-10/023F, March 2011) which acknowledges that human disturbance resulting in elevated conductivity in stream systems "dominated by salts of Ca^{2+}, Mg^{2+}, SO_4^{2-} and HCO_3^- at a circum-neutral to alkaline pH" will negatively impact macroinvertebrate communities, and that specific conductivity is the simplest and most effective predictor of that impairment.

The second attachment is a two page comparison of water quality conditions in Malibu Creek watershed to water quality values from the EPA paper by Pond, *et al*., titled "Natural water quality influence on macroinvertebrate and algal bioassessment measures." This is a reasonable comparison, since MMIs used in the EPA study are comparable to the southern California IBI and pH and ionic dominance in Malibu Creek watershed streams are similar to those downstream of mined sites in West Virginia. In this brief summary, we show that specific conductance in Malibu Creek watershed is as high or higher than downstream of mined sites in West Virginia, and that concentrations of those ions identified as contributing the most to macroinvertebrate toxicity downstream of mined sites are about as high or higher in Malibu Creek watershed. Malibu Creek's northern tributaries are dominated by the Modelo Formation, a depositionally unique subset of the Monterey Formation, which is California's primary petroleum source rock. Coal-source rock and petroleum source rock both produce high conductivity and ion toxicity. The EPA's conductivity benchmark report recognizes that high conductivity water impairs macroinvertebrate communities when the conductivity results from human activity. However, if specific conductance and ionic concentrations are naturally elevated, as they are in flows from Malibu Creek's undeveloped northern tributaries, then macroinvertebrate community structure may be a natural reflection of natural conditions. We have done a considerable amount of research on the geology of Malibu Creek watershed and would be glad to provide additional information on the rock and its effects on water quality.

Request

We are looking at the Sedimentation / Siltation listings in Malibu Creek watershed in advance of EPA development of the TMDL. Because the listings were made prior to 2006, our current understanding of the listings is limited. We have requested information on the listing from the State Water Resources Control Board, and they directed us to the Los Angeles Regional Water Quality Control Board. Multiple requests to the Regional Board have gone unanswered. Could someone from your staff provide us with the sedimentation / siltation listing data for Malibu Creek watershed streams and answer the following questions?

Questions:

Can we obtain the listing data (Data Reference)?

What was the Water Quality Objective/Criterion?

What is the Objective/Criterion Reference?

What was the Evaluation Guideline?

What was the Guideline Reference?

Thank you very much for your consideration of this information during the development of Malibu Creek watershed's benthic macroinvertebrate bioassessment TMDL. And thank you in advance for your help in providing information on the sedimentation / siltation listings.

Jan Dougall

Environmental Analyst

Las Virgenes Municipal Water District

4232 Las Virgenes Rd.

Calabasas, CA 91302

(818) 251-2167

jdougall@lvmwd.com

[attachment "Pond-et-al_Coal-mining-effects-on-macroinverts_2008_JNABS.pdf" removed by Cindy Lin/R9/USEPA/US]
[attachment "WQ-effects-on-BMI-measures_v2012-03-12.pdf" removed by Cindy Lin/R9/USEPA/US]